



U.S. Fish & Wildlife Service

Arctic National Wildlife Refuge

Spring 2009

"My visit truly gave me a sense of just how small I am in the vast wilderness."

Refuge Visitor

Welcome to the Arctic National Wildlife Refuge. While thousands have travelled across the Refuge since its establishment in 1960, millions more know and care about this landscape. We hope this inaugural news bulletin brings our work and this special place to you, wherever you may be.

Within these pages, you'll see examples of what we do on your behalf. From unfolding the mysteries of a bird in decline, to involving you in Refuge management. As federal employees we understand we are stewards of your Refuge—America's Wilderness Refuge.

Whether you've set foot within the Refuge or not, we hope the stories told in these pages stimulate you to participate in its stewardship, and enhance your enjoyment and appreciation of this special place.

Richard Voss
Refuge Manager

Smith's Longspur—An uncommon bird at home on the Refuge



USFWS

Smith's Longspur male in the Arctic Refuge.

As the only National Wildlife Refuge in the United States with a significant breeding population of Smith's Longspurs, the Arctic Refuge plays a role in understanding the birds' breeding biology. That's important because these little birds are recognized by the U.S. Fish and Wildlife Service as a species of concern—they have a small total population and they winter in a limited area in the south-central United States, where they may be vulnerable to land-use changes caused by human activities.

Past research in Canada has shown that these birds exhibit an unusual breeding strategy in which each female mates with one to three males and each male mates with one to three females. The chicks in each nest are from one female but individual chicks have different fathers. Because their young are distributed between a number of nests, several males may feed chicks in a single nest, and each male may feed chicks in a number of nests.

Little is known about Smith's Longspurs on their summer breeding grounds in Alaska, but that is changing. Arctic Refuge biologists, in partnership with other federal agencies and the University of Alaska, have studied Smith's Longspurs since 2006. In 2007, a graduate student from the University of Alaska began work to create a model to predict the distribution of these birds based on their habitat preferences and other environmental factors. To test this model, four new areas will be surveyed in the summer of 2009. ➤



USFWS

A chilly biologist at 3 am on Smith's Longspur breeding habitat.

USFWS

► To study Smith's Longspurs in the Refuge, biologists overcome the challenges of cold, snowy summer weather; nearby grizzly bears, ground squirrels, and numerous biting insects; and arduous 5-mile climbs up steep cliff faces. Bird observations begin at 3 o'clock in the morning each day. Birds were captured using a light-weight net stretched across the tundra. Colored leg-bands are attached by biologists to help them better understand the birds' behavior and determine which birds associate with which nests. Chest-swabs are used to collect genetic material from chicks and adults.

All these efforts are resulting in a clearer understanding of the breeding behavior and habitat requirements of these



Map of Smith's Longspur winter (nonbreeding) and breeding ranges.

uncommon birds, and the importance to them of the Arctic Refuge. 🐾

What future for the Arctic Refuge?

The Arctic Refuge was first established in 1960 for the purpose of preserving its "unique wildlife, wilderness, and recreational values." In 1980 the Alaska National Interest Lands Conservation Act (ANILCA) added several complementary purposes, including ensuring the opportunity for continued subsistence uses.

How should the Refuge be managed to best meet these purposes? How can the U.S. Fish and Wildlife Service provide the public with the greatest freedom to use and enjoy the Refuge while ensuring that its unique values are protected for future generations? What issues—concerns, problems, or threats—ought to be addressed?

These important questions will be addressed by three plans the Refuge is beginning work on—the **Comprehensive**

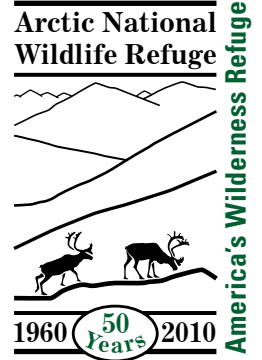
Conservation Plan, the **Public Use Management Plan**, and a **Wilderness Stewardship Plan**. Together, these plans will identify the Refuge's most important qualities, and describe how they are to be protected and made available to the public.

The Refuge is now developing a program to involve those interested in the planning process. We'll begin meeting with the public in October. We'll first meet with the villages whose residents are most dependent on Refuge resources. We'll listen to visitors, those who come for a week or two of adventure and solitude in the wilds. And we'll need to consider Americans who never visit, but who find satisfaction, even inspiration, in just knowing the Refuge is here. We'll be asking your thoughts as to how the Refuge should be used, how it should be protected and, most important, your vision for its future. 🐾

Celebrating 50 years

Establishment of the Arctic National Wildlife Refuge on December 6th 1960 was a milestone in conservation history. As a response to concerns about rapid changes to our environment, Americans showed a growing ecological awareness by safeguarding this magnificent northern landscape.

The story of Arctic Refuge's founding reminds us that Americans can accomplish visionary goals. Though our country still faces enormous environmental challenges, the Refuge's 50th anniversary presents an opportunity to be inspired by the heroes of conservation history while working toward a new vision of our future.



In 2010, support of Arctic Refuge—*America's Wilderness Refuge*—will help us talk with friends and neighbors about our interdependent relationship with the Earth and the importance of Refuges everywhere.

Join us to celebrate the 50th anniversary of Arctic Refuge. With your help, National Wildlife Refuges will remain treasures for us all!

Want to know more? Visit us at <http://arctic.fws.gov/50th.htm> or contact us at ArcticRefuge50th@fws.gov. 🐾



River corridor within the Arctic Refuge.

Tracking caribou by radio and satellite for more than 30 years

During four chilly days in March, Refuge biologists and pilots worked with staff from the Yukon (Canada) Department of Environment to capture 15 caribou and fit them with new telemetry collars. Information gained from these collars allows agencies and Native communities to make informed decisions on management strategies of the Porcupine Caribou herd.

This collaring operation took place while the caribou were in the southern portion of the Arctic Refuge. Animals were captured by shooting a lightweight net from a helicopter. The net wrapped around an animal and limited its movements, allowing the biologists to attach a new collar with little trauma to the animal. This is a less stressful capture method than the alternative of shooting an animal with a drug-filled dart. Safety of the animals and capture crew were the most important components of this operation, and no animals or people were hurt during the capture activities.

New radio-collars were placed on 1 bull and 7 cows. A young cow that was originally caught in 2005 as a yearling was recaptured. She received a new

radio-collar that will allow biologists to follow a complete life history of her from when she was a calf up through her adult life. In addition, six adult cows whose satellite collar batteries were due to fail were recaptured and fitted with new collars. Body measurements and blood samples were taken from each animal to better evaluate herd health.

To monitor the wellbeing of the Porcupine Caribou herd, biologists track the caribou throughout the year. Because of the herd's long migration over hundreds of miles, following the caribou on foot or by airplane is not possible. By using a combination of radio telemetry and satellite telemetry, biologists track several aspects of the herd, such as calving locations and success, migration routes, annual survival, and the location



Cow caribou receives a new collar to replace her old one.

USFWS

and quality of the wintering grounds.

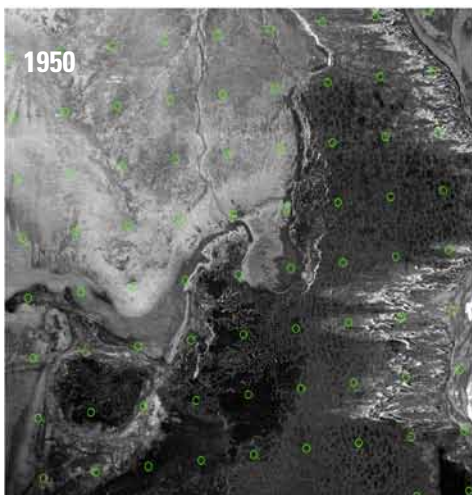
This collared caribou project has been in place for over 30 years. Biologists will continue to capture animals each spring so researchers can follow a consistent number of animals throughout the years ahead. The Porcupine Caribou herd has one of the longest and most detailed data records of any caribou herd in the world. 🐾

Tracking landscape changes for more than 50 years

About 10 years ago, the University of Alaska Fairbanks discovered boxes of forgotten aerial photographs taken of lands in the 1940s and early 1950s that later became Arctic Refuge. The Refuge's botanist is now comparing these old photographs with photos taken in the 1980s and with satellite images from the present to see what differences have occurred over the past half century.

Variations that show up in some of the photographs include changes in lake water levels, vegetation, landslides, ice wedge patterns, forest fires, rivers, and coastline erosion. These photo comparisons help Refuge staff understand how landscapes transform over time, and provide clues about what to expect in the future.

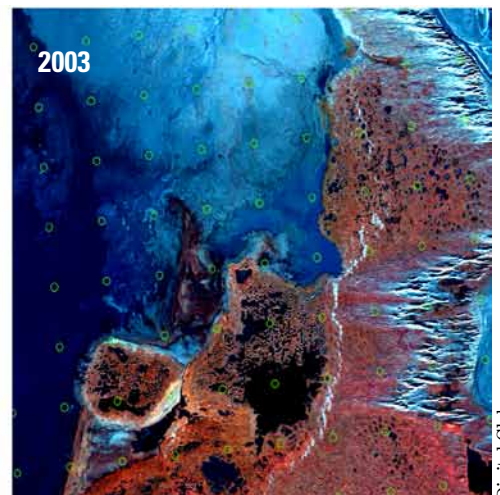
The three photos below show an area of the Jago River delta in 1950, 1984, and 2003. Changes appear in the sand dunes on the right of each image, the mud-flats off-shore, and the sand-spit and peninsula in the center that have eroded over the past 53 years. 🐾



US Army



USFWS



Digital Globe

Migratory bird calendar winner

In April on the Arctic Refuge there were three feet of snow and temperatures plunged below zero each night. It was difficult to imagine migrating birds would arrive in only a few weeks. However, inside the Kaktovik and Arctic Village schools, on the boundary of the Refuge, students were celebrating the birds that were heading north. The 2010 Alaska Migratory Bird Calendar Contest awards ceremonies were underway.

The contest encourages village children to learn about migratory bird conservation. Each year, students in Kindergarten through 12th grade submit a poster or a brief written entry. Schools in northern and western Alaska participate in the contest. The contest is hosted, and the calendar is produced, by the U.S. Fish and Wildlife Service. Calendars are provided free to students and families in the participating villages.

This year's contest theme: "Alaska: North America's Bird Nursery." Twenty-four winners of the state-wide artwork and literature competitions will be published in the 2010 Alaska Migratory Bird Calendar. Of the more than 1,600 entries this spring, fifth grader Cody Tetreau of Kaktovik was one of only 12 state-wide winners selected to have his literary work included in the 2010 calendar. Cody's entry:

Alaska's Bird Nursery

Small birds,
Big birds,
Birds with flirty feathers come forth.
Many birds visit Alaska's great north,
The bird nursery for every generation,
But we need your cooperation.
So help birds live healthy lives,
Prevent pollution so many birds will thrive. 🐾



Literature winner Cody Tetreau.

New visitor center in Arctic Village

The Arctic Village visitor center, in the planning and construction stages for the past 5 years, is finally a reality. This spring, the Arctic Village community joined the Arctic Refuge staff to celebrate the grand opening of their new, shared visitor center. Through this partnership, visitors will learn about Refuge natural resources and local Gwich'in cultural values.

Arctic Village is an ideal location for such a visitor center. It is the only community along the roadless southern boundary of the Refuge and is therefore a natural access point for visitors and small aircraft flying into the Refuge.

Youth Conservation Corps workers from the village assisted Refuge staff to refurbish an old building near the airstrip,



Arctic Village visitor center.

about a mile from the village. Then they added a front porch, an outhouse, and a storage shed; brought in new furniture; and placed a sign on the building. In the shared inside space, the Arctic Village Council plans to open a sales outlet, and the Refuge will provide information and interpretive exhibits for visitors. The Refuge plans to hire a seasonal Refuge Information Technician from Arctic Village to assist with center operations. 🐾

Two successful summer camps

Arctic Village

The 8th Annual Alaska Native Traditional Knowledge and Western Science Camp took place in August on Dachanlee Mountain, 7 miles from Arctic Village, just south of the Arctic Refuge. Forty students from kindergarten through 12th grade, and 30 other village residents, participated in the three-day outdoor camp, which is funded through partnership grants and organized by the Refuge.

Local elders demonstrated traditional survival skills including how to set traps for wolves, wolverine, rabbits, and ground squirrels; techniques for building fires; and how to cook subsistence foods. Elders encouraged students to complete school and to practice the traditional ways of the tribe.

The science portion of the camp emphasized growing, gathering and preserving local foods. Volunteers from the Alaska National Wildlife Refuges Friends Group, along with an Agriculture and Horticulture agent representing Tribes in Interior Alaska, introduced students to worm composting and other garden-related activities.

Kaktovik

In August, 12 students in the small, isolated community of Kaktovik, on the northern coast of the Arctic Refuge, participated in a 4-day Kaktovik Science Camp, during which they investigated the creatures living below the surface of the Arctic Ocean.

The camp, held in the Arctic Refuge's bunkhouse, was a partnership between the Refuge, the University of Texas, and the Friends of Alaska National Wildlife Refuges.

Camp participants, in second through fifth grade, studied the anatomy and life history of the invertebrates and fish that live in the lagoon waters around their village. Students discovered that these creatures are food for the birds, fish, and marine mammals that villagers harvest during subsistence hunts. 🐾



Arctic Village summer camp.

Retired telemetry receivers return to active duty



Harry Reynolds

Radio-tracking a Gobi bear (inset) in Mongolia.

Arctic Refuge has donated 5 telemetry receiver-scanners to the International Association for Bear Research and Management. (<http://www.bearbiology.org/>). This professional organization—all volunteer, non-profit and tax-exempt—promotes the conservation and restoration of the world's bears through science-based research, management and education. The Association loans the receivers and provides grants to wildlife biologists in countries where resources for bear research and conservation are limited.

The story of these receivers began in 1982 when they were purchased by the

Refuge for studies of the coastal plain (1002 Area). For over 25 years, these sturdy receivers tracked radio-collared caribou, muskoxen, grizzly bears, sheep, moose, wolves, and fish in the Refuge. Cooperative projects with the Alaska Department of Fish and Game and the Yukon government required compatible radio frequencies among partners. But radio frequencies used for telemetry projects eventually changed, causing use of these receivers to decline.

A suggestion by Refuge staff to donate the receivers to the International Association for Bear Research and

Management was supported by the Refuge. The receivers were refurbished and, in spite of their long years of use, were in excellent condition when they were received by the Association.

Wildlife biologists who borrow the receivers must return them in this same condition. Currently some of these receivers are being used to radio-track Gobi bears in the deserts of Mongolia. These bears are a sub-species of the brown bear and are listed as Critically Endangered in the Mongolian Red Book of endangered species—only 20 to 50 still exist. Mongolian biologists are using newly acquired telemetry techniques to discover previously unknown information about these highly endangered bears.

From retirement in a Refuge cabinet to deployment in new places, the receivers are contributing to bear conservation projects throughout the world. 🐾

Looking at plants

Refuge botanists are working on several projects to inventory and monitor plants.

In one project, botanists study the impacts of vehicle traffic on tundra plants. In the winters of 1984 and 1985, vehicles were used to conduct seismic exploration for oil on the Refuge. Since then, changes in the vegetation on these vehicle trails have been monitored, along with nearby undisturbed tundra. Most vehicle trails have recovered well over the 23-year period, but on some trails the permafrost has melted to form a wet trough. This is the longest arctic vegetation monitoring project of its kind. Continued monitoring helps the Refuge better understand how human activities cause changes in Arctic plant communities.

In another project, the Refuge joined a worldwide effort to study vegetation on mountain summits and to document any changes to this vegetation over time. During the summer of 2008, Refuge botanists and volunteers began their participation in the project. They established four sites along a ridge in the western portion of the Refuge and made a survey of the alpine plants growing at each location. The plants at these sites will be resurveyed every 5 years to monitor changes. 🐾

How big is your footprint?

Faced with the rising costs of heating oil, gasoline, and air travel, there is certainly incentive to reduce fuel use from an economical standpoint. At the Arctic Refuge, we continually strive to make our funding go as far as possible. But there is another reason to reduce our use of carbon-emitting resources—global climate change. Scientists around the world are realizing that man-made carbon emissions are creating a warming trend, and perhaps nowhere in the United States are rising temperatures more noticeable than in the arctic.

Employees of the Arctic Refuge are taking steps to reduce their consumption of fossil fuels by identifying energy-efficient ways of meeting the goals of the Refuge while lessening the carbon footprint of those activities. For example, solar panels have replaced gasoline-

powered generators; flights in Refuge aircraft and commercial airlines have been reduced or streamlined; a Web conference system now brings long-distance training and meetings into the Fairbanks office; and electrical sensors and timers are reducing electricity consumption. Finally, employees have calculated the carbon footprint of their work-related activities for the past fiscal year, and have set a goal of reducing this footprint in the coming year.

Former US Fish and Wildlife Service Director H. Dale Hall asked Service employees to reduce the carbon footprint of their work activities. Arctic Refuge employees embrace this directive, and invite other Service offices to develop their own ways to reduce the Service's carbon footprint this fiscal year, and save money, too. 🐾

Impacts of a changing climate

Refuge staff, along with other agencies and scientists, are studying the impacts of global climate change within the Arctic Refuge. Some early findings from these ongoing studies include:

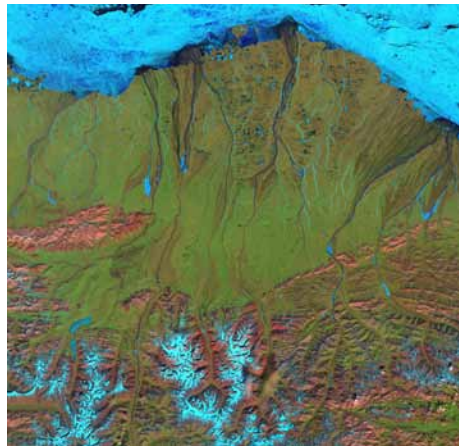
- Sea ice has thinned and decreased in extent. Shorefast ice tends to form later in fall. In September 2007, the extent and concentration of sea ice in the Arctic Ocean was significantly less than ever previously recorded. Although total area of ice was slightly greater in September 2008, volume of ice continued to decline because of thinning.
- Coastal erosion east of Kaktovik averaged 1.6 feet per year between 1948 and 2001, based on repeat aerial photography. This is lower than rates of 8 feet per year measured by the same methods east and west of the Refuge.
- Pregnant polar bears increasingly select land over sea ice for denning, possibly because of deteriorating sea-ice conditions.
- Polar bears have drowned in unusually large expanses of open water, and have been found dead in emaciated condition.
- Recent incidents of cannibalism among polar bears may be due to the nutritional stresses related to longer ice-free seasons.
- Muskox numbers have declined on the Refuge. A potential factor is mid-winter icing caused by freezing rain and thaws. This icing reduces access to food and also increases the amount of energy each animal uses. Other factors, for example predation, disease, or changes in plants, may also play a role in reduced numbers of muskoxen.
- Permanent vegetation plots and repeat-photograph studies so far do not show dramatic or consistent changes in Refuge vegetation. This is in contrast to areas of western Alaska, where shrub cover increases have been seen in photographs taken in 1999-2000 compared to photos taken in 1948-1950.
- In the Refuge, permafrost warmed 1.5-3° C between 1985 and 2004. If predicted air temperature warming of 5° C occurs over the next century, some of the permafrost north of the Brooks Range will likely thaw.
- McCall Glacier and other alpine glaciers in the Refuge have receded dramatically over the past half-century, and the rate of ice melt has increased in recent years. If ice loss continues to accelerate according to current trends, all Brooks Range glaciers will disappear in 80 to 100 years.

More information about these studies is available by contacting the Arctic Refuge at arctic_refuge@fws.gov. 🐾



USGS

Sled dogs used by a U.S. Geological Survey (USGS) researcher to visit one of his four permafrost and climate monitoring stations in Arctic Refuge.



The Arctic Refuge's coastal plain and mountains, viewed from an earth-orbiting satellite in mid-June 2001.

NASA Earth Observatory

Kaktovik builds capacity to manage fish and wildlife resources

The Native Village of Kaktovik Tribal Council is using funds awarded through the U.S. Fish and Wildlife Service's Tribal Wildlife Grant program to build their Natural Resource Management and Stewardship capacity. The grant program provides money and technical assistance to Tribal governments to develop and implement programs that benefit wildlife and their habitats, including species of Native American cultural or traditional importance and species that are not hunted or fished.

Grant recipients are selected through a nationally competitive process. Proposals are evaluated according to resource benefit, performance measures, work plan, budget, capacity building, and their partnerships and contributions.

The Native Village of Kaktovik has used their grant funds to work toward the following goals:

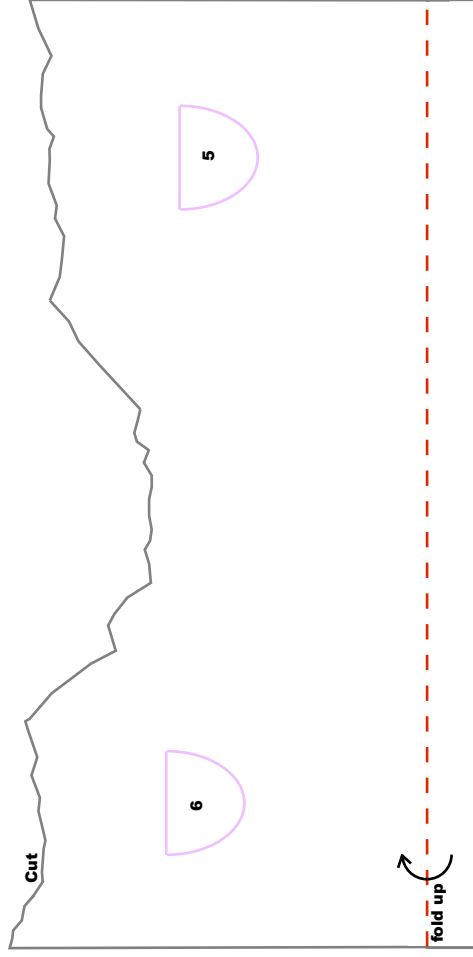
- 1) Conserve polar bears through management of human / polar bear interactions.
- 2) Improve land and resource stewardship by providing temporary funding for a director for their Natural Resources Department. This person serves as a village-based point of contact for Kaktovik residents who serve on Federal and State committees and councils, and who consult with private industry.
- 3) Provide leadership in natural resources management through village-based capacity building. By this effort, the Native Village of Kaktovik continues to build partnerships between the Tribe and private, university, State, and Federal partners who work on natural resources issues.

The Refuge works to preserve fish and wildlife populations in their natural habitats and to provide opportunities for continued subsistence uses by local residents. Refuge staff are excited to be working with the Native Village of Kaktovik to address problems important to the people of Kaktovik and the Service. 🐾

Snowy Owl Pop-up Activity

In this challenging activity, most children will need adult help. Follow the directions below to create a three-dimensional landscape diorama by folding and gluing together the cut out shapes on this page.

Cut



A brown lemming hides from a snowy owl on the Arctic Refuge coastal plain. The foothills and mountains of the Brooks Range appear in the background.

Lemming numbers change greatly from year to year. Snowy owls only nest on the Arctic Refuge coastal plain in years when lemming numbers are very high there. When there are few lemmings in the Refuge, the owls nest in other places in the Arctic where there are lots of lemmings.



Directions:




We only have room for brief instructions here. You can follow

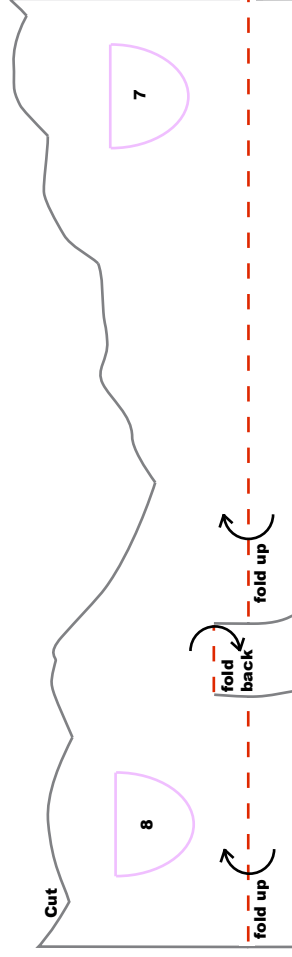
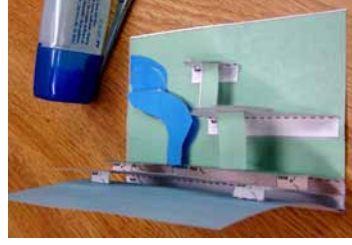
step-by-step illustrated directions on the web at

<http://arctic.fws.gov/popsodirections.htm>.

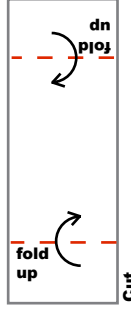
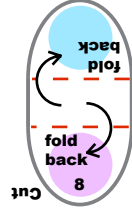
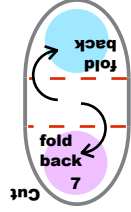
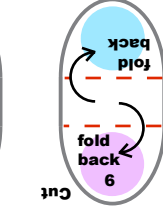
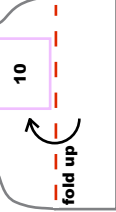
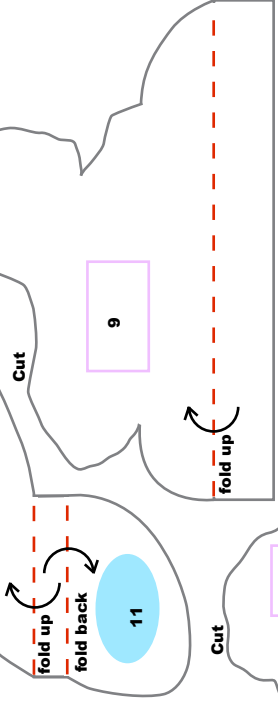
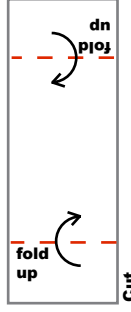
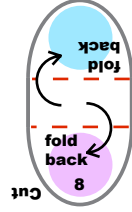
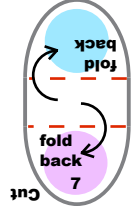
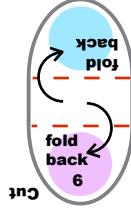
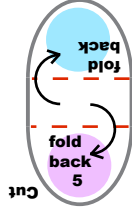
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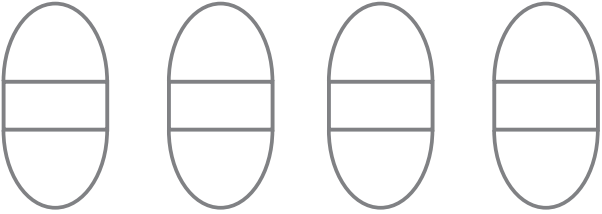
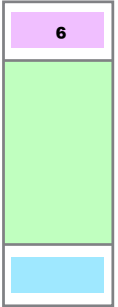
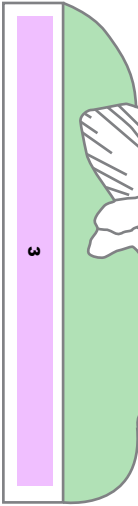
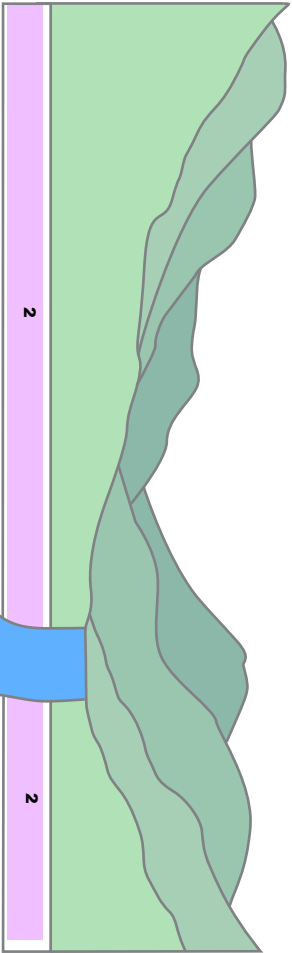
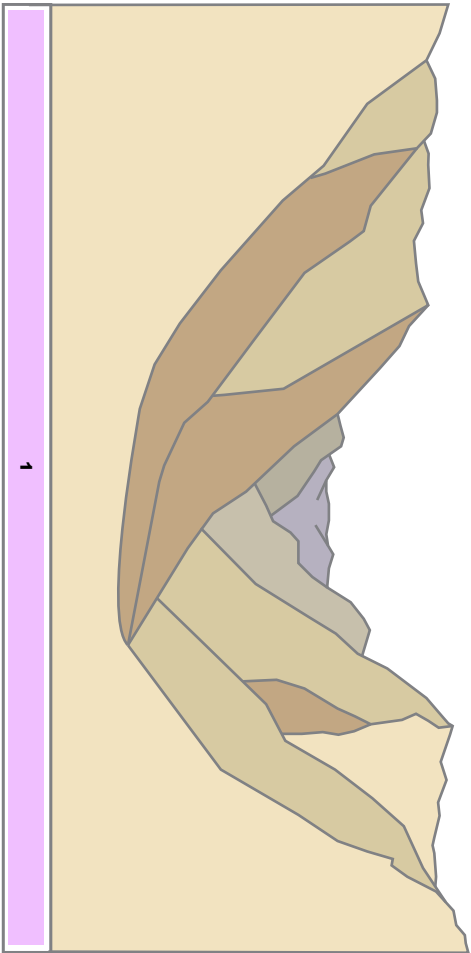
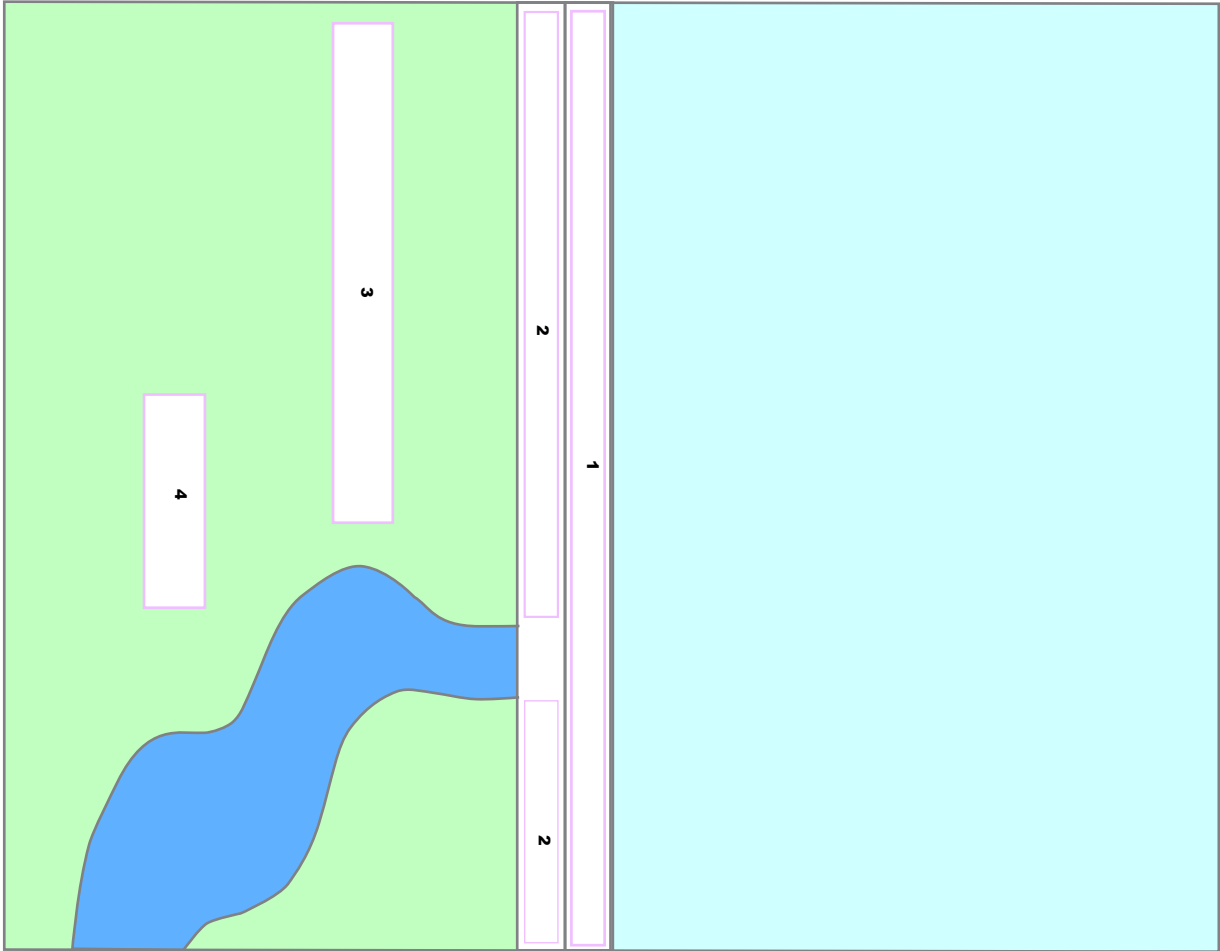
<http://arctic.fws.gov/popsnowyowl.htm>.

- 1) **Cut out** each piece of the snowy owl pop-up on the gray outlines.
- 2) **Fold** all parts along dotted red lines, following fold directions.
- 3) **Glue each pink area** (looks like this: ) to its pink outline (looks like this: ) , matching each number and shape.
- 4) **Flatten all pop-ups away from the centerfold.**
Flatten tabs back toward the centerfold (leave folds in "river"), and apply glue to all blue ends (looks like this: )).
- 5) **Close card to attach blue ends** and complete pop-up.



Cut along gray lines.





Technology aids traditional use of Refuge resources

When the Alaska National Interest Lands Conservation Act was signed into law in 1980 it had wide-ranging affects on National Wildlife Refuges throughout Alaska. One element of this law recognized the dependence that many rural Alaskans have on subsistence resources. The subsistence provision of this law requires the Arctic Refuge to provide continuing opportunities for local, rural residents to use plants, wildlife, and fish for food, shelter, fuel, clothing, and tools.

One way that the Refuge does this is by participating in the Arctic Borderlands Ecological Knowledge Co-op, a partnership of communities, co-management groups, and government agencies in northwest Canada and northeast Alaska. Arctic Borderlands cooperatively monitors ecological health, the impacts of climate change, and the status of the Porcupine Caribou herd to ensure that rural residents can subsist on local, wildland resources. Partners meet each year to discuss current conditions of the land and resources. Last year's gathering was scheduled for 29-30 March



Gathering participants in Alaska speak over the webcam to participants in Canada.

2008 in the Northwest Territories village of Inuvik, Canada but a new border regulation requiring Alaskans to carry passports to cross the Alaska-Canada border posed problems for Gathering organizers. They could not guarantee that Alaskan participants would be allowed to re-cross the US border to return home without passports.

To overcome this challenge, the organizers arranged to have portions of the meetings broadcast via web-cameras

from the tiny Canadian village of Inuvik to the University of Alaska in Fairbanks, Alaska. "It was novel for some of the elders to speak in Gwich'in over the internet and share what our people are seeing on the land" said the Borderlands President. "We were concerned that this might be a technical or computer disaster but it turned out pretty good—our first e-Gathering." 🐾

Does this caribou pose problems for people?

In remote communities all across Alaska, far from the shopping malls so familiar to most Americans, villagers continue age-old traditions of subsisting on local animals and plants that they hunt and gather. Recently, a hunter from Arctic Village, just outside the boundary of the Arctic Refuge, had an unexpected surprise. He was stunned to see a large, red lump on the forehead of a caribou he shot.

The villagers were concerned and curious—they knew it was unusual to find such a lump. The Christmas holidays were fast approaching, when villagers share their harvest with family and friends throughout the region. They worried that perhaps their Native food delicacies were tainted by disease or were otherwise unhealthy to eat.

To find out if the meat was safe, the hunter contacted the Arctic Refuge. Purposes of the Arctic Refuge



Caribou with large wart on his forehead.

include preserving wildlife values, conserving caribou herds, and providing opportunities for subsistence uses, so Refuge biologists made arrangements to pay shipping for the caribou head to be flown the 300 roadless miles from Arctic Village to Fairbanks. Staff then delivered the package to the local Alaska Department of Fish and Game office.

The veterinarian there reassured villagers and Refuge staff that the

caribou meat was safe to eat. She discovered that the large lump of fibrous material was a type of wart, 3 inches in diameter, confined to the skin of the one-to-two-year-old bull caribou. She explained that such warts are, fortunately, not transmittable to people. She noted that the warts are "more common in moose than caribou. I get a couple from moose sent in per year, but from caribou about one every other year."

Arctic Refuge employees were glad to hear that this particular caribou wasn't infected with a serious wildlife disease that could present problems for the caribou herds that reside in the Refuge. Arctic Village residents were pleased to know that their traditional foods continue to be a healthy choice. Caribou will remain a cherished component of their daily eating and their holiday celebrations. 🐾

Summaries of 2008 biological work

Arctic Refuge biologists are dedicated to conserving fish and wildlife populations and habitats in their natural diversity. A portion of their work is presented in the following two pages:

Caribou

Porcupine Caribou Herd

Most of these caribou overwintered in southern portions of the Arctic Refuge, while a small group wintered in the Yukon Territory. The caribou began their spring migration in mid-April, 2008, moving east along the Brooks Range Mountains and north onto the coastal plain.

The annual calving survey was conducted in early June. Of 69 cows observed, 34 had calves, 21 were still pregnant or had given birth and lost a calf, and 14 were likely not pregnant. The majority of calving occurred around May 30. Seventy-nine percent of adult cows (4 years or older) gave birth, similar to the 22-year average of 81%.

Although snow melted early from the Refuge coastal plain, the majority (67%) of the caribou gave birth to their calves in Canada, and the rest (about 33%) gave birth on the Arctic Refuge.

By mid-June, most of the herd had moved onto the Arctic Refuge. A survey was conducted in late June to determine which calves survived and to estimate the proportion of cows accompanied by calves. Most of the herd was in the northern foothills of the Brooks Range in the Arctic Refuge at this time. Post-calving survival was estimated to be 92%, similar to the 15-year average of 88%.

Biologists planned to conduct a photocensus of the Porcupine herd if the caribou aggregated on the coastal plain. The caribou did not aggregate there, however, because the weather was generally cool and there were few insects. By late June and early July, most of the herd moved south into the Brooks Range mountains. Three attempts were made to radiotrack and monitor the herd in hopes that a photocensus could be conducted. Thunderstorms and a low cloud ceiling prevented tracking flights, however, and the photocensus had to be cancelled. Biologists now hope to complete the census in 2009.

Central Arctic Caribou Herd

The majority of this herd wintered along the northwestern boundary of the Refuge in the northern foothills of the Brooks Range.

The Alaska Department of Fish and Game conducted a calving survey of the herd in early June 2008. Of 46 radiocollared caribou cows, 16 were pregnant and 29 were accompanied by calves. Ninety-eight percent of adult cows (4 years or older) gave birth. By late June, 42 of 50 caribou had calves. The majority of calving occurred on June 2.

The herd has used western areas of the Arctic Refuge more frequently and in larger numbers over the past few years. The greatest increase in use of the Refuge has occurred during July, when caribou form groups near the coast where they feed in areas that provide relief from biting insects. In 2008, a large portion of the herd was found in the northwest corner of the Refuge. The Alaska Department of Fish and Game conducted a summer photocensus of the herd. Results will be available in 2009.

Moose

Moose in northeast Alaska suffered a substantial decline in the early 1990s because of a series of severe winters. The moose population is still quite low within the northern half of the Refuge. Because of the low population size, subsistence and sport hunting of these moose was stopped in 1996. A limited subsistence harvest has been allowed since the 2004-2005 season, but sport hunting remains closed.

In April 2007, Refuge biologists conducted aerial surveys of moose within northern portions of the Refuge. They saw 59 moose along river drainages. Their data suggest that the population size has not changed substantially since the last survey in 2005, during which 47 moose were observed in the same areas.

Plans are underway to conduct a similar moose survey in April, 2009. Refuge biologists also plan to conduct a study of moose movements, survival, and reproduction beginning in 2010. Up to 25 moose will be fitted with GPS (global positioning system)-satellite collars to track their movements. This study will indicate whether moose in this region

migrate to other areas—for example, across the Brooks Range—and will help managers understand why the moose population in this area has not yet shown the recovery that has occurred in other areas of northern Alaska.

Dall Sheep

Hulahula River

Refuge biologists conducted a survey of Dall sheep in the Hulahula River area in mid-June. The researchers traveled the survey route by foot, and used a high-power telescope to observe the sheep. The animals were classified by sex and age—as lamb, yearling, 2-year old ram or ewe, and adult ram or ewe—and adult rams were classified based on the degree of their horn curl. Similar surveys have been conducted in this area for 12 of the past 16 years.

This year, 512 sheep in 46 groups were observed. The lamb to ewe ratio, an indicator of reproductive success, was 44.7 lambs per 100 ewes. This was similar to the 2003-2007 average of 41.4, and represents good lamb production. The observed ratio of 33.2 yearlings per 100 ewes in 2008 was slightly greater than the 2003-2007 average of 27.1, and suggests that overwinter survival of last year's lambs was relatively high. New plant growth appeared to be late this year. As a result, sheep were easily observed at low elevations within the river valley during the survey.

Atigun Pass

Biologists conducted a Dall sheep survey along the Atigun River north of Atigun Pass in early June 2008. The objectives of the survey were to estimate the age and sex composition for this sheep population, and to document distribution of sheep within the survey area. Biologists traveled by vehicle along the Dalton Highway portion of the route, and on foot through the gorge. This survey has been conducted yearly since 1986.

Biologists observed 226 Dall sheep in 34 groups, including 40 rams and 93 adult ewes. Groups varied from 1 to 37 animals, and averaged 6.6 sheep per group. There were 49.5 lambs per 100 ewes in this count, which is greater than the 20-year average of 44.1 for this area, and also exceeded the estimated lamb production of 43.2 in 2007. Biologists estimated 17.2 yearlings per 100 ewes, suggesting that approximately 40% of the lambs seen in June 2007 survived to June 2008.

Arctic Village Sheep Management Area

The Arctic Village Sheep Management Area was established in 1991 in an area north and west of Arctic Village, in the southern portion of the Refuge. The area was expanded in 1995 to include the entire drainages of Cane and Red Sheep Creeks.

Refuge biologists conducted a ground-based survey during mid-June 2008 in the headwaters of Cane and Red Sheep Creeks to assess lamb production and age structure of the sheep population in this northern portion of the Sheep Management Area. The sheep were concentrated at 2 mineral licks. Researchers observed 130 sheep, primarily ewes, lambs, yearlings, and 2-year olds. Based on the stage of vegetation green-up and snowmelt, biologists believe that ram groups had dispersed from the river corridors and mineral licks into higher elevation areas that were not surveyed. Survey results indicate that there were 58.7 lambs per 100 adult ewes, which represents excellent productivity. There were also 19.6 yearlings per 100 ewes in this survey. The Refuge plans to repeat this survey in 2009 to evaluate overwinter survival of lambs in this area.

Muskoxen

The population of muskoxen in northeastern Alaska and northwestern Canada declined between 1999 and 2006, and muskoxen almost disappeared from the Arctic Refuge. In April 2008, biologists conducted a pre-calving muskox census across the coastal plain tundra within the northern portion of the Refuge. They counted 44 muskoxen in 3 groups during the census. Based on these observations, and other counts east and west of the Refuge, biologists estimate that there are about 250 muskoxen in northeastern Alaska, and that the total population is about 350 animals, including 100 muskoxen in northwestern Canada.

The decline in muskoxen was likely caused by low calf recruitment in some years, increased adult mortality, and changes in distribution of the animals. Factors likely having a negative effect on the number of muskoxen in northeastern Alaska include: (1) severe weather conditions such as icing events and deep snow that reduce access to winter forage and increase energetic costs; (2) diseases and parasites that affect body condition; and (3) predation, primarily by grizzly bears.

Grizzly Bears

The estimated density of grizzly bears in the northern half of the Refuge is 18.3 bears per 1000 square kilometers. Arctic Refuge, the Alaska Department of Fish and Game, and others have monitored grizzly bears on the coastal plain and in the northern foothills of the Refuge since 2006. They use GPS (Global Positioning System) satellite telemetry to determine high-use areas, important habitats, possible predation events, and den sites.

Preliminary results suggest that grizzly bears feed on carcasses (mostly caribou) and plant roots from April until early June before new vegetation emerges. During summer, bears feed mostly on horsetails, sedges, grasses and leaves, plus ground squirrels, lemmings and voles in areas where small mammals are abundant.

Biologists are analyzing blood and hair samples that have been collected from bears over the last 33 years to evaluate long-term trends in diet. These studies will help managers understand the relationship between grizzly bears and their prey over time. Results from these studies suggest that the relative amount of vegetation versus meat in grizzly bear diets has remained fairly constant during this 33-year period.

Birds

Avian Influenza Surveillance

Researchers collected samples from several shorebird species to test for exposure to highly pathogenic avian influenza (H5N1), a viral disease of birds that has been known to cause human illness and death in other areas of the world. The virus has not been documented in birds from Alaska. Certain species were targeted for sampling because they migrate through areas of the world known to have had outbreaks of H5N1 avian influenza, raising the possibility that these birds could have been exposed to the virus and might bring it into the United States. Similar sampling efforts in 2006 and 2007 did not detect the presence of this virus in any of the samples collected on the Refuge. In 2008, 133 birds were sampled at three sites on the coast of the Arctic Refuge, including 115 Dunlin, 17 Pectoral Sandpipers, 1 Buff-breasted Sandpiper, and 1 Long-billed Dowitcher. As was the case in past years, all this year's samples were negative for H5N1 avian influenza.

Shorebirds on the Beaufort Sea coast

Several species of shorebirds use coastal areas of the Arctic Refuge after their breeding season. Feeding in these areas is critical for fattening prior to migration. However, reduced sea ice cover and changing ocean conditions in the Beaufort Sea are causing flooding and increased coastal erosion, which threatens coastal mudflats used by shorebirds. In addition, offshore areas north of the Refuge have recently been leased for oil exploration. This raises the potential that oil spills and increased on-shore and offshore industrial activities may negatively affect shorebirds in the region. Studies of how and why post-breeding shorebirds use coastal habitats will help Refuge Managers protect the birds in the face of future changes.

Researchers have studied shorebird use of Refuge coastal areas since 2005. They identified several high-use sites, but also found considerable variability in habitat use between years and even between days within the same year. Their observations suggest that habitat use is influenced by weather and water conditions, which likely determine food availability for birds. In 2009, continued studies will investigate shorebird diets, and the factors affecting the abundance and distribution of the small invertebrates that are known to be the birds' primary food source. This research is part of a 5-year study of how and why post-breeding shorebirds use the mudflats along the Beaufort Sea coast of the Arctic Refuge. 🐾



Wolf and caribou tracks.

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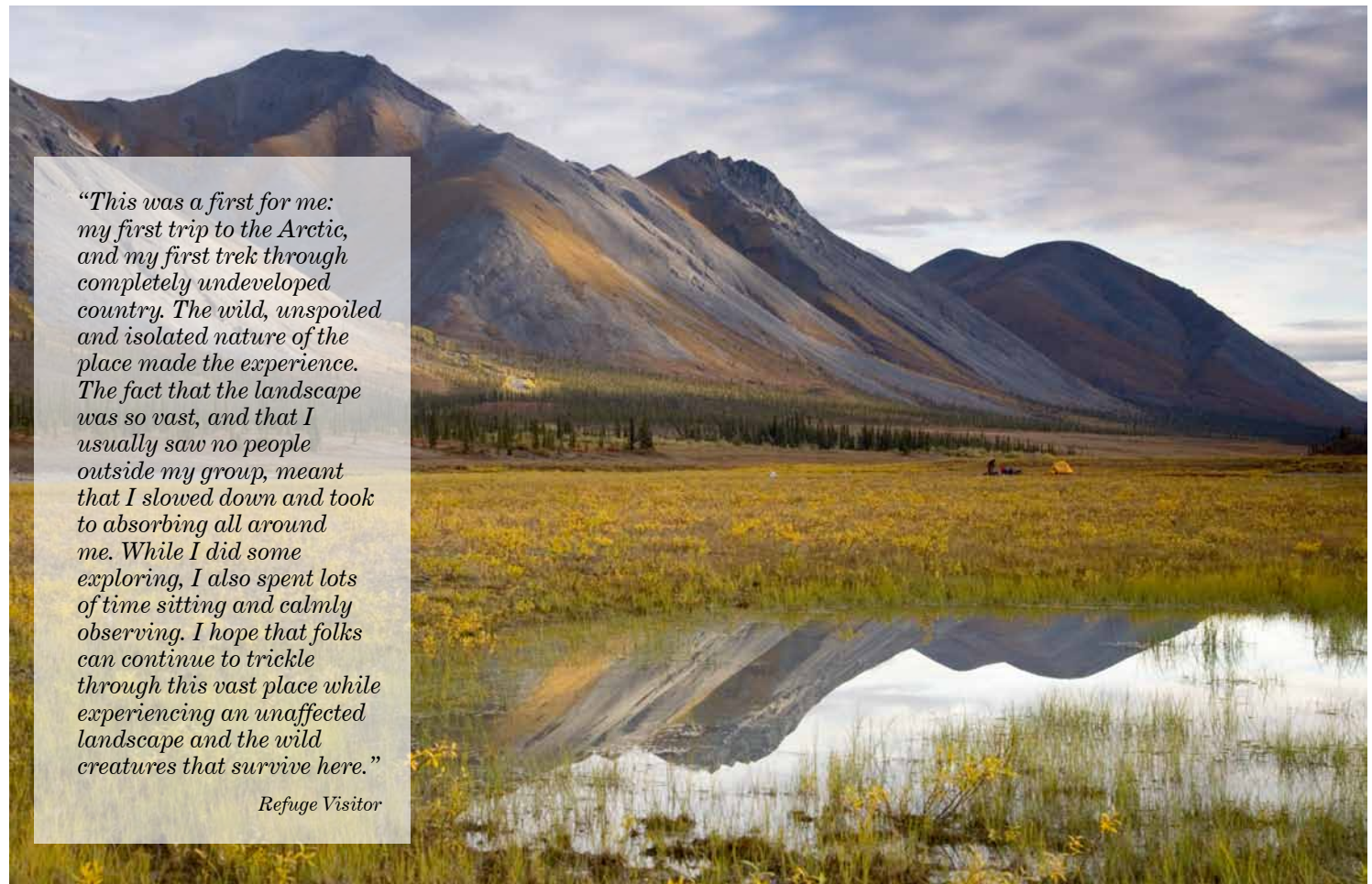
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*This news bulletin is available at
<http://arctic.fws.gov/nbs2009.pdf>*

"This was a first for me: my first trip to the Arctic, and my first trek through completely undeveloped country. The wild, unspoiled and isolated nature of the place made the experience. The fact that the landscape was so vast, and that I usually saw no people outside my group, meant that I slowed down and took to absorbing all around me. While I did some exploring, I also spent lots of time sitting and calmly observing. I hope that folks can continue to trickle through this vast place while experiencing an unaffected landscape and the wild creatures that survive here."

Refuge Visitor



Wilderness camping within the Arctic National Wildlife Refuge.